

REMARKS/ARGUMENTS

Claims 6, 12 and 20 have been canceled without prejudice or disclaimer. Claims 1, 3, 4, 5, 7, 8, 13, 15, 16, 19, 21 and 22 have been amended. New claims 42-60 have been added. Subsequent to the entry of the present amendment, claims 1-5, 7-11, 13-19, 21, 22 and 42-60 are pending and at issue. These amendments and new claims add no new matter as the claim language is fully supported by the specification and original claims.

I. Rejection under 35 U.S.C. §103

Claims 1-22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Jacobson et al. (US 6,120,666, hereinafter "Jacobson") in view of Kurabayashi et al. (PG PUB 20030054558, hereinafter "Kurabayashi"). Applicants respectfully traverse this rejection.

The Office Action alleges that "Jacobson discloses a micro device used for cytometry processes and comprised of a "focusing chamber formed in a surface of the substrate and in fluid communication with two sample fluid channels ['inlet channels' – Examiner] and three focusing fluid channels" (Abstract). "The focusing channels are formed such that one sample channel is positioned between the first and second focusing channel and the second sample channel is positioned between the second and third focusing channel" under sub-orthogonal angles (Col. 2, lines 30-35, Figures 2-3). Jacobson does not teach more than three focusing channels arranged in 3-D configuration ['channels over and under the inlet channel']."

The Applicants respectfully disagree with the Office Action's characterization of the Jacobson reference. The Office action incorrectly states that Jacobson includes "three focusing channels arranged in 3-D configuration ['channels over and under the inlet channel']." A closer review of Jacobson indicates that it is only a 2-D device, with no more than two focusing channels used with any one sample channel. Figure 2A clearly shows focusing chamber 22 with three focusing channels (32, 40, 42) and two sample channels (28, 36) being planar, even stating that "focusing chamber 22, is formed in the surface of the microchip device 10 at the confluence of sample channels 28 and 36, the focusing channels 40, 32, and 42, and the waste channels 48

and 50.” (Jacobson, col. 45, lines 33-36). It is also clear that both sample channels 28 and 36 share the center focusing channel 32 (i.e., no more than two focusing channels are used with any one sample channel). This is described in the specification, stating “the fluid streams in focusing channels 40 and 32 and sample channel 28 converge into waste 48, and the fluid streams in focusing channels 32 and 42 and sample channel 36 converge into waste channel 50.” (Jacobson, col. 5, lines 9-14, FIG. 2A).

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success. Third, the prior art must teach or suggest all of the recited claim limitations. Of course, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant’s disclosure.

First, the prior art fails to teach or suggest all of the recited claim limitations. The Office Action alleges that “Jacobson does not teach more than three focusing channels arranged in 3-D configuration [‘channels over and under the inlet channel’]” but that “Kurabayashi discloses a “gas-focusing flow cytometer ... wherein focusing of said liquid sample is multidimensional, said liquid sample channel surrounded by minimally three focusing gas channels distributed radially with respect to a longitudinal axis of said liquid sample channel” (see Claim 8).” (emphasis in original).

Applicants have amended the claims to include at least four focusing channels converging with an inlet channel at different orientations, with at least the first and second focusing channels being planar with the inlet channel, and the third and fourth focusing channels being non-planar with the inlet channel. See, for example, amended claim 1, which discloses “the plurality of focusing channels include a first channel on a first side of the inlet channel, a second channel on a second side of the inlet channel, a third upper channel over the inlet channel, and a fourth lower channel under the inlet channel, the first and second focusing

channels being planar with the inlet channel and the third and fourth focusing channels being non-planar with the inlet channel. See also, for example, amended claim 19 which discloses “at least four micro-fluidic focusing channels to each convey one of a plurality of focusing flows, wherein the at least four micro-fluidic focusing channels include first and second focusing channels coplanar with the inlet channel, and third and fourth focusing channels not coplanar with the inlet channel”.

Nowhere in Jacobson or Kurabayashi, separately or a combination of the two, is it disclosed using four or more focusing channels acting with any one inlet channel, or that two of the focusing channels are planar with the inlet channel and the other two focusing channels are non-planar with the inlet channel, as required in the amended claims. With the amendments to independent claims 1, 5 and 19 in the present response, requiring four focusing channels with at least the first and second focusing channels being planar with the inlet channel, and the third and fourth focusing channels being non-planar with the inlet channel, the prior art clearly does not teach or suggest all of the recited claim limitations.

Second, there is no reasonable expectation of success of the proposed combination. As discussed above, Jacobson discloses a 2-D micro chip device 10 with three focusing channels (32, 40, 42) and two sample channels (28, 36) formed in the surface of a solid substrate material, with no more than two focusing channels used with any one sample channel. Since the channels are formed in the surface of the solid substrate material, it is unclear how the Jacobson 2-D structure could be modified into a 3-D structure to accommodate an additional third focusing channel (and a fourth channel required in the amended claims) and radially distribute the focusing channels of Kurabayashi around the inlet channel Jacobson, as suggested by the Office Action.

Finally, there is no suggestion or motivation to modify the Jacobson reference or to combine the teachings of Jacobson and Kurabayashi. As discussed above, Jacobson discloses a 2-D micro chip device having sample channels with each sample channel having two focusing

channels, one on each side, to focus the inlet stream to the center. Since the Jacobson device is a 2-D configuration, there is no suggestion or motivation to add any additional focusing channels on the 2-D device next to the sample channel because any additional focusing channels would be redundant to the two existing focusing channels acting on the sample channel.

Accordingly, Applicants submit that the claimed invention would not have been obvious in view of the cited references and, therefore, respectfully request that the rejection of the claims under 35 U.S.C. §103 be withdrawn.

II. New claims

Applicants have added new claims 42-60, with new independent claim 45, based on original claim 12 re-written in independent form, which includes six focusing channels. These new claims add no new matter as the claim language is fully supported by the specification and original claims. These new claims should be allowable over the prior art for at least the same or similar reasons discussed above for the amended claims.

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Sundararajan, et al.
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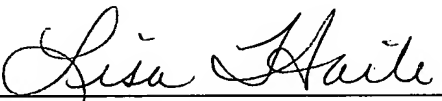
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Attorney Docket No.: INTEL1370 (P15623)

III. Conclusion

In view of the above amendments and remarks, reconsideration and favorable action on all claims are respectfully requested. In the event any matters remain to be resolved, the Examiner is requested to contact the undersigned at the telephone number given below so that a prompt disposition of this application can be achieved. No fee is believed due in connection with this Response. However, The Commissioner is hereby authorized to charge any fees that may be associated with this communication, or credit any overpayment to Deposit Account No. 07-1896.

Respectfully submitted,

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